

INTEGRATED SUPPORT ENVIRONMENT (ISE) MAINTENANCE & OPERATIONS STATUS REPORT

(Deliverable 0414)

October 6, 1995

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Prepared for:

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1. INTRODUCTION

1.1. Identification of Document

This is the second of the bi-monthly Maintenance & Operations (M&O) status reports for the Integrated Support Environment (ISE). The ISE is being established under the Infrastructure and Tool Development task order (Task 4B) of the Earth Observing System Data and Information System (EOSDIS) Independent Verification and Validation (IV&V) contract. The ISE will provide the tools and infrastructure necessary for the performance of EOSDIS IV&V contract.

1.2. Purpose and Scope of Document

Even though the ISE is primarily comprised of Commercial Off-The-Shelf (COTS) products, the establishment of the ISE also includes developed tools and customizations of off-the-shelf Lotus Notes database applications. The purpose of this report is to detail, on a bi-monthly basis, ISE M&O status information associated with the network/computational infrastructure and developed tools. Information in the report will include but is not limited to:

- added COTS tools,
- COTS tool upgrades,
- COTS configuration and maintenance,
- database updates (i.e. ECS RTM/Oracle imports, ECS BONEs model updates)
- computing infrastructure improvements,
- developed/customized tool enhancements and releases,
- end user support and training, and
- infrastructure/utilization statistics.

1.3. Document Status and Schedule

This ISE M&O Status Report, dated 6 October 1995, includes M&O status for the months of August and September 1995. Deliveries of this report are scheduled bi-monthly as follows:

- August 4, 1995
- October 6, 1995
- December 8, 1995
- February 7, 1996
- April 5, 1996
- June 7, 1996

2. Network/Computational Infrastructure Status

Network/computational infrastructure M&O status encompasses general system administration activities associated with the ISE. Section 2.1, Infrastructure Overview details the computing infrastructure which is maintained for the Greenbelt, MD and Fairmont, WV sites.

2.1. Infrastructure Overview

The ISE system architecture reflects a networked heterogeneous environment incorporating several COTS products and a few developed or customized applications. The planned ISE architecture has been detailed in the ISE System Architecture Document dated 30 January 1995. The documented architecture depicts an environment which is flexible and supportive for incrementally adding tools as new needs and requirements are levied against the ISE. Exhibit 2.1-1 reflects the network/computational infrastructure of the ISE. Note that the infrastructure depicted also serves as the computational infrastructure necessary to support ISE development.

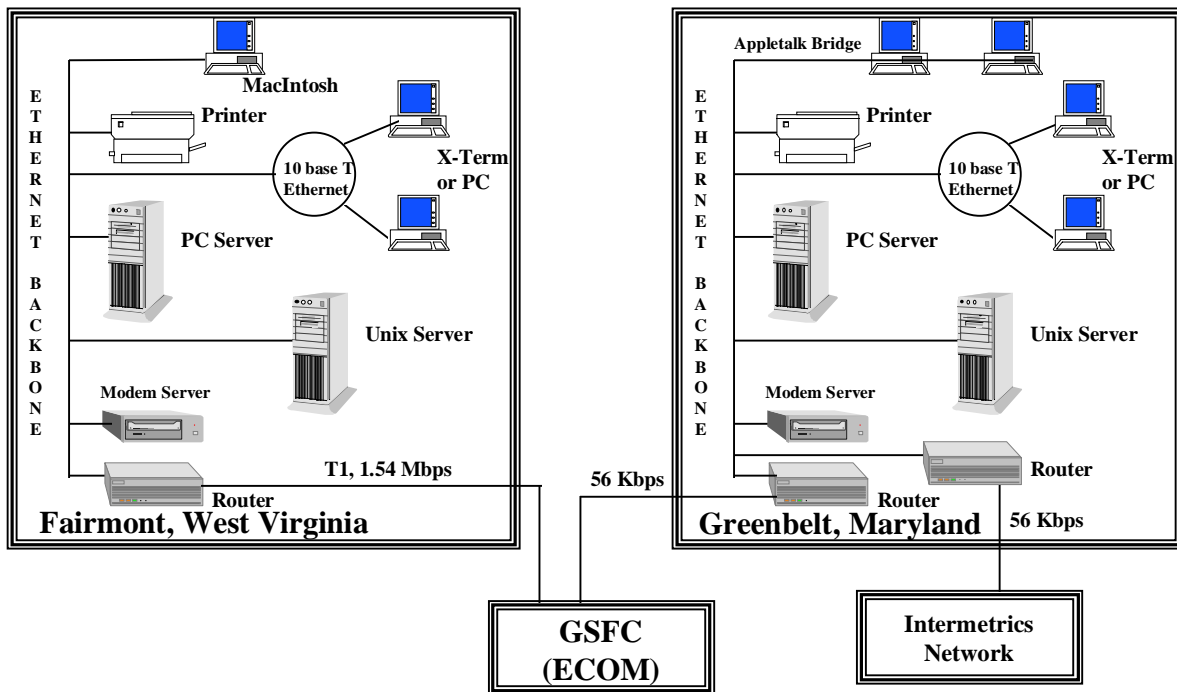


Exhibit 2.1-1 Network/Computational Infrastructure

In addition to the network/computational infrastructure, a high level understanding of the development infrastructure can be garnered from Exhibit 2.1-2, ISE Development Infrastructure.

This exhibit depicts many of the COTS tools which are a part of the ISE as well as the tools necessary to satisfy tool development undertakings.

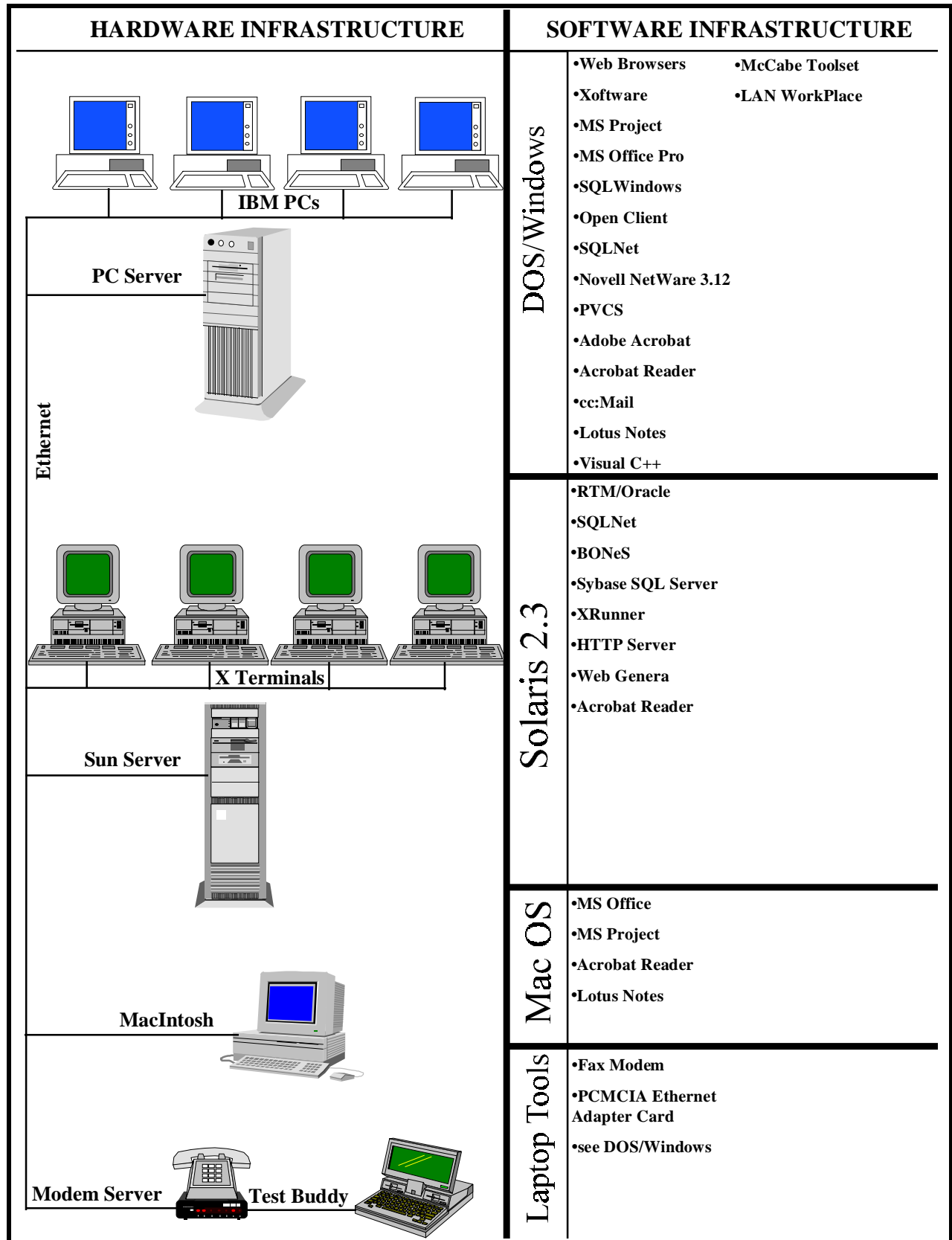


Exhibit 2.1-2 ISE Development Infrastructure

Table 2.1-1 delineates the number of PCs, MACs, X-Terminals, Suns, and printers which are currently configured and maintained as a part of the EOSDIS IV&V computing infrastructure in Greenbelt, MD and Fairmont, WV.

Facility Location	PCs	MACs	X-Terms	Suns	Printers
Greenbelt, MD	41	6	7	1	4
Fairmont, WV	12	1	4	1	1
TOTALS	53	7	11	2	5

Table 2.1-1 Facility Hardware Configurations

For additional information concerning the ISE network/computational infrastructure and ISE Toolbox tools, refer to sections 5.2.1 and 5.2.2 of the ISE System Architecture Document dated 30 January 1995.

2.2. System Administration Status

System administration activities for the current period were highlighted by the Intermetrics Network Managers Conference conducted at the Intermetrics corporate offices in Cambridge, MA on September 21st and 22nd. The conference addressed current networking and system administration issues. The conference was attended by the system administrators in both the Fairmont, WV and Greenbelt, MD offices.

The following bulleted items provides an overview of system administration activities performed during this status reporting period:

General System Administration

- Performed monthly, weekly, and daily backups of SPARC Servers and the PC file servers.
- Performed monthly cc:Mail maintenance.
- Provided daily support for software and hardware problems/needs.
- Supported the ISE System Design Review conducted on September 13th.

Lotus Notes System Administration

- Reinstalled and reconfigured the Lotus Notes server in Greenbelt, MD in order to enable connectivity with the Lotus Notes server in Fairmont, WV. Reinstallation and reconfiguration was necessary to achieve protocol compatibility, consistency in naming conventions, and a secure Lotus Notes network environment.
- Reinstalled Lotus Notes client software on all workstations in Fairmont, WV and Greenbelt, MD.
- Implemented a daily database replication schedule between the Lotus Notes servers in Fairmont, WV and Greenbelt, MD. All shared databases are replicated on a daily basis.

Hardware/Software Configuration Administration

- Upgraded the operating system of Fairmont's Macintosh PowerPC to System 7.5.
- Installed a new server backup tape drive (HP SureStore 6000) in Fairmont's PC server.
- Resized the /var partition on the Sparcserver in Fairmont, WV to allow for larger print jobs.

Database Administration

- Imported new ECS RTM/Oracle requirement database versions which were received from HAIS (2 August 1995 version and 18 September 1995 version).
- Created new development partitions for the ISE Sybase database.

2.3. COTS Evaluation/Procurement Status

In support of EOSDIS IV&V analysis and tooling efforts, COTS product evaluations are performed to determine the best alternative for fulfilling an EOSDIS IV&V need. Based upon recent evaluations, procurement activities have been initiated for several COTS products. To date, evaluation copies of PVCS, SQLNet, and Xoftware are being utilized to support ongoing efforts. The procurement of these products should occur within the next 60 days or evaluation copies must be returned. Procurement of these products within this time frame should be realized due to the recent procurement authority that was granted for COTS products costing less than 25K. During the current reporting period the procurement of two COTS products, Open Client and the McCabe Toolset, was completed. The McCabe Toolset was procured by the NASA/WVU Software IV&V Facility in Fairmont, WV as a tool which can be utilized on all IV&V efforts that are on-going in the facility.

3. Development Item Status

In order to fulfill specific IV&V tooling needs that could not be adequately addressed by available COTS products, development initiatives were undertaken. ISE tool development initiatives include the following:

- **Data Management Database (DMDB)**
This is a Lotus Notes application targeted to support management and tracking of Government Furnished Equipment (GFE).
- **Issue/Discrepancy Handling System (IDHS)**
This is a Lotus Notes application targeted to support the management, dissemination, and tracking of EOSDIS IV&V issues and Review Item Discrepancies (RIDs).
- **Automated Requirements Database (ARDB)**
The current version of this application is in Excel with Object Linking and Embedding (OLE) of word documents. This applications primary serves as a repository of requirement analysis results.
- **Interface Analysis Database (IADB)**
The current version of this application is in Microsoft Access. The IADB primarily supports interface analysis activities by providing database consistency, completeness, and reporting functionality.
- **EOSDIS IV&V homepage**
This application is implemented in HTML and shell scripts which are accessible to World Wide Web (WWW) browsers. This application is used to disseminate information about the EOSDIS IV&V effort inclusive of deliverables, contacts, etc.
- **Test Management Database (TMDB)**
This application is being implemented in the SQLWindows client/server development tool. A design prototype currently exists. This application is utilized to store and track EOSDIS System Integration and Test (SI&T) information.

For additional information about functionality provided by each tool, refer to the ISE Element Software Design Document (dated 14 July 1995) or the ISE Software Requirements Document (dated 28 July 1995). The following subsections detail status associated with this reporting period.

3.1. Data Management Database (DMDB) Status

This Lotus Notes application was deployed in January 1995. Several enhancements were made to the DMDB during this reporting period:

- Created 3 new views to enhance the display of database documents/records.

- Added fields to GFE forms to store purchase price, inventory date, and inventory results.

3.2. Issue/Discrepancy Handling System (IDHS) Status

The initial release of this application was deployed in the Intermetrics Greenbelt office in June. Approximately 30 IV&V analysts and managers have been trained in the use of the tool. During the current reporting period, end-user reorientation was provided in support of CDR Review Item Discrepancy (RID) submission. And as anticipated, some minor modifications to IDHS were made to support RID process changes for the SCDO CDR.

3.3. Automated Requirements Database (ARDB) Status

The Microsoft Excel/Word version of the ARDB was released during August 1994. This version has been utilized to support Requirements Analysis (Task 5) activities since initial deployment. In order to effectively disseminate ARDB data to GSFC personnel via the Wide Area Network (WAN) to either PC or MAC platforms, a client/server implementation was initiated in April 1995. Initial deployment of the ARDB client/server tool is scheduled for 18 October 1995.

Accomplishments during this reporting period which are associated with the ARDB client/server prototyping effort are reflected by the bulleted items below:

- Improved reports by adding the ability to discern and display different configurations. Added totals to the metrics report to produce totals for each break group.
- Added the capability to query Oracle for Class and Release information so that the application will work with any RTM data.
- Added the capability to access multiple versions of the RTM data since multiple versions are now stored in the database.
- Enhanced login procedure and password changing dialog.
- Added ability to view issues by double clicking.
- Added ability to view issues in dialog form.
- Studied the ECS schemas in order to understand pending changes to the schema. The application will be enhanced to handle both the old and new schemas.

3.4. Interface Analysis Database (IADB) Status

The initial release of the IADB Microsoft Access application was deployed in December of 1994. Since that time several enhancements and modifications have been incorporated to support on-going Interface Analysis (Task 9) activities. During the current reporting period, the IADB was enhanced to support ICD-level data capture and analysis, and IRD/ICD traceability analysis. Future plans call for modifying the IADB functional modeling capability to support end-to-end interface consistency and completeness analysis.

3.5. Homepage Development Status

3.5.1. EOSDIS IV&V Homepage Status

The EOSDIS IV&V Homepage was developed using Hyper Text Markup Language (HTML) and published via a HTTP server which resides on the Fairmont Sun Sparcserver 1000. The original intent of the page was to disseminate EOSDIS IV&V deliverable information via the WWW. The initial EOSDIS IV&V Homepage was deployed for public access in March 1995. Since that time, the majority of EOSDIS IV&V deliverables have been made available via the page and personnel contact information has also been published.

During this reporting period, the EOSDIS IV&V Homepage has added the capability to perform index and full-text searching of documents via freewais 0.5. Other enhancements/changes which are still under development, but will be included during the next reporting period include:

- Removal of the I&T document library and other related I&T information. This information will be made available via the EOS Ground System I&T Homepage.
- Integration of library searching support into the homepage maintenance tool.
- Inclusion of abstract documents into the library to permit preliminary review of documentation prior to the format conversion process.
- Addition of built-in utilization statistics.

3.5.2. EOS Ground System (EGS) I&T Homepage Status

The EOS Ground System I&T Homepage is currently under development and is due to be released 1 November 1995. Like the EOSDIS IV&V Homepage, this homepage is being developed using Hyper Text Markup Language (HTML) and will be published via a HTTP server which resides on the Fairmont Sun Sparcserver 1000. The functionality of this homepage will also be very similar to the EOSDIS IV&V Homepage in that it will provide a document library and a contacts list as well as other information relevant to the subject matter of the homepage. The EGS I&T Homepage will contain all information germane to EGS I&T that is currently disseminated via the EOSDIS IV&V Homepage. This information will no longer be available on the EOSDIS IV&V Homepage after the release of the EGS I&T Homepage.

The EGS I&T Homepage began development during this reporting period. The homepage is currently operational as a prototype and its URL has been released to the appropriate personnel for evaluation purposes.

3.6. Test Management Database (TMDB) Status

The TMDB client/server application is being developed to support the EOSDIS IV&V System Integration and Test (SI&T) effort (Task 11). The first official release of the TMDB application was delivered on 30 August 1995. The second release is scheduled for 18 October 1995.

During this reporting period, the following functionality/enhancements have been added to the TMDB and will be delivered as part of the next release:

- Added a user access level control panel. This panel identifies all of the users of the application as well as their access level.
- Enhanced existing test case and test procedure panels.
- Created a strawman panel to support the generation of tables for the final test report.
- Refined the RTM/Oracle to ISE/Sybase import tool to include analysis, metrics, and update panels.
- Developed a skeletal resource scheduling panel.

4. Deliverable Status

During this reporting period, the following Task 4 deliverables were distributed for review:

- ISE System Design Review presentation
The ISE system design was presented to Darrell Lakins, Ted Ackerson, and other key EOSDIS IV&V personnel in the Intermetrics Greenbelt, MD office. This design review was presented as scheduled.

Deliverables scheduled for distribution during the next reporting period include this ISE M&O Status Report and the ISE User's Guide scheduled for 30 November 1995.

5. End-User Support and Training

The following bulleted list highlights support and training items addressed during this reporting period.

- Helped Lee LaCoste publish EOSDIS IV&V deliverables on the EOSDIS IV&V Homepage.
- Provided informal training to Greenbelt IV&V personnel in the use of Release 1.0 of the TMDB.
- Provided IDHS reorientation training in support of the SCDO CDR.

In preparation for the upcoming ECS FOS Release A/Release B CDR (17 October 1995 - 19 October 1995) and the SCDO IDR (30 October 1995 - 4 November 1995), Task 4 personnel will be providing IDHS reorientation so that each analyst that will be generating RIDs is comfortable with the tool.

6. Infrastructure/Utilization Metrics

With the exception of the EOSDIS IV&V Homepage, the primary users of the ISE has been the EOSDIS IV&V personnel located in Fairmont, WV and Greenbelt, MD. Table 6-1 reflects ISE utilization information associated with both the infrastructure and developed tools. With the exception of the EOSDIS IV&V Homepage, the metrics reported corresponds to the average number of users for each month of this reporting period.

IV&V Resource	Number of Users (Average per Month)
Greenbelt LAN (EOSDIS IV&V Personnel)	43
Fairmont LAN (EOSDIS IV&V Personnel)	10
Data Management Database	3
Issue/Discrepancy Handling System	4
Automated Requirements Database	9
Interface Analysis Database	10
EOSDIS IV&V Homepage	4329 (TOTAL)
March 1995	520
April 1995	267
May 1995	250
June 1995	801
July 1995	891
August 1995	906
September 1995	694
Test Management Database	3

Table 6-1 ISE Utilization Metrics

Reporting on the utilization of COTS tools (e.g. RTM) is being considered for future ISE M&O Status Reports. Feedback or comments on additional ISE utilization metrics are welcomed.

7. Acronyms and Abbreviations

Below is a list of the abbreviations and acronyms used in this document.

ARDB	-	Automated Requirements Database
BONeS	-	Block Oriented Network Simulator
CDR	-	Critical Design Review
COTS	-	Commercial Off-The-Shelf
CSC	-	Computer Science Corporation
DMDB	-	Data Management Database
ECS	-	EOSDIS Core System
EGS	-	EOS Ground System
EOSDIS	-	Earth Observing System Data Information System
GFE	-	Government Furnished Equipment
GSFC	-	Goddard Space Flight Center
GUI	-	Graphic User Interface
HTML	-	Hyper Text Markup Language
IADB	-	Interface Analysis Database
IDHS	-	Issue/Discrepancy Handling System
ISE	-	Integrated Support Environment
IV&V	-	Independent Verification and Validation
I&T	-	Integration and Test
LAN	-	Local Area Network
MAC	-	Macintosh
MD	-	Maryland
M&O	-	Maintenance and Operations
NASA	-	National Aeronautics And Space Administration
PC	-	Personal Computer
RAM	-	Random Access Memory
RDBMS	-	Relational Data Base Management System
RID	-	Review Item Discrepancy
RTM	-	Requirements Traceability Management
SEPG	-	Systems Engineering Process Group
SI&T	-	System Integration and Test
TMDB	-	Test Management Database
WAN	-	Wide Area Network
WV	-	West Virginia
WVU	-	West Virginia University
WWW	-	World Wide Web

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